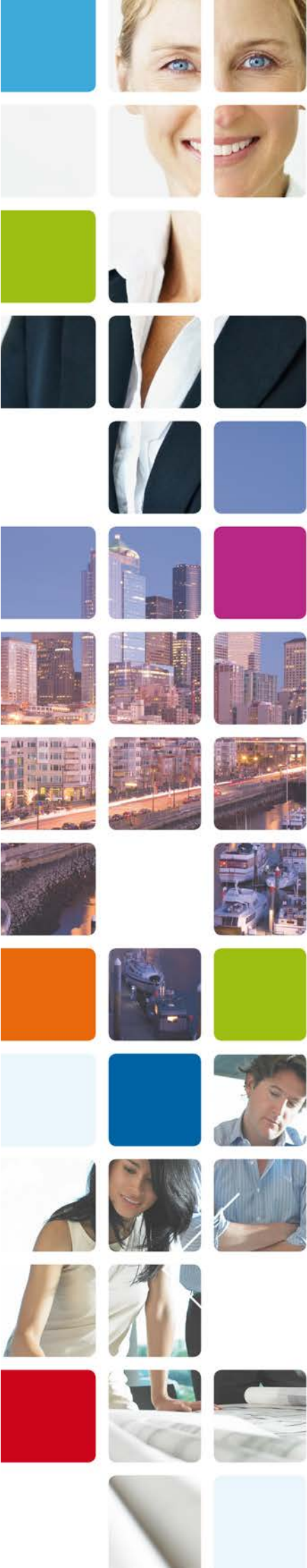


Convergence of Workplace and Information Technology

A view on current trends

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1 Introduction

The world of Facility Management is changing at a rapid pace. Economical, social and technical developments influence its role, position as well as operating practices. Any assessment of change directly relates to its definition. So, what is the definition of FM? According to the International Facility Management Association (IFMA) the definition of 'Facility Management' is:

“Facility management is a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology.”¹

The Facility Management profession provides organizations with the safe and appropriate workplace, enabling employees to work and achieve their goals. As the definition states, the primary focus is on the built environment. Typically this involves office, laboratory, educational- or production facilities.

Innovations in Technology are enabling FM professionals to manage the physical infrastructure of offices and services in new ways. Many of these Technology developments align with developing new and innovative office-like workplaces.

Information Technology related technology innovations are changing the set of tools that (knowledge) workers can (and will) use, enabling them to work in new and fundamentally different ways. We see trends of increasing mobilization. In fact, part of the 'workplace' is becoming a virtual one. This fact alone is posing the question towards the Facility Management community how to relate to this.

As the 'managers of the workplace', the Facility Management professionals will be challenged to take advantage of all opportunities provided by these trends, integrating them into new workplace concepts, fitting to the needs of their organization.

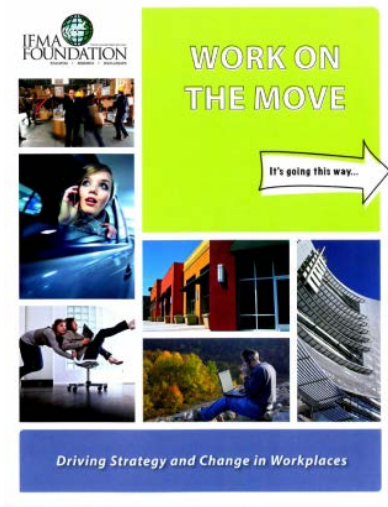
Workplace innovation projects are nowadays being launched world-wide, accommodating employee mobility and providing them with the environments to meet, inspire and collaborate effectively.

The workplace of the future will be a more combined physical and virtual infrastructure. The FM profession will need to understand how best to implement the new technologies and use their potential to maximize value of the workplace. One can expect that senior FM and IT management will work together to define how the organization will support and manage the workplace, both in the physical and in the

¹ See www.ifma.org

virtual world.

Active and early involvement of senior IT and information management in workplace innovation projects is a desirable practice, increasing the probability of success. At a 2011 German conference on workplace innovation, three out of 14 presenters had CIO titles.



The IFMA publication ‘Work on the Move’ that was published end of October, 2011 at IFMA ‘World Workplace’ conference, provides a comprehensive overview of key aspects of workplace innovation and provides many examples of projects that have already been completed.

ISBN 9781883176853, see www.ifma.org

2 Forces Driving Change

Organizations are in a constant state of change. This holds true for their facility management activities as well. For Facility Management, change is incurred by different types of drivers of which some are relatively new. Their combined influence is driving today’s workplace innovation initiatives.

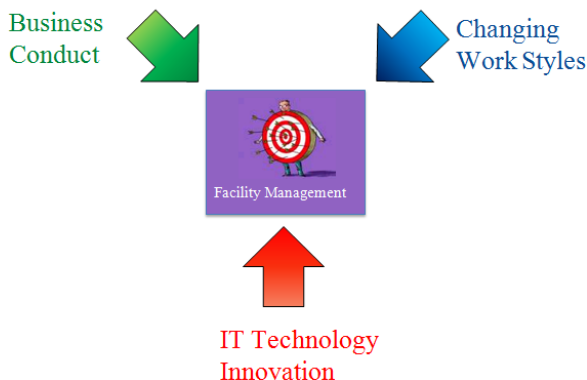


Figure: forces influencing workplace innovation

Business Conduct

There are many influences that tend to alter business conduct of organizations. Many of those are specific to the type of business and the markets they operate in. There are some generic developments that seem to influence organizations. Economical as well as social developments influence organizations' needs and the way they desire to operate.

The monetary issues as arose in 2011 are influencing revenue projections and thus financial priorities. Budgets vary for FM-types of operations, influencing the business planning of FM investments and operations itself. Sustainability requirements are impacting the way we look at facilities and the requirements we pose upon them as well.

Facility managers are challenged to provide answers to the change in demand, which is put forward by their organization.

Changing Work Styles

A major trend we see emerging is the principle of 'time and place independent work'. Employees will not necessary go to the organization's facilities to work, they are willing and enabled to work at the time as well as the location of their choosing.

A well known expression is '*work is an activity, not a place*'.

We see new styles of management emerging, moving away from 'command and control' types of management. It is replaced by styles based on leadership, coaching and 'inspect and adapt' based types of management. Transparency, engagement, commitment and trust are the type of fundamentals that HRM management is emphasizing in this kind of organizations.

Information Technology Innovations

Technology is increasingly changing where and how we work. Technology innovation is applicable to multiple aspects of the FM profession. Technologies are developing, enabling professionals to manage the physical infrastructure of facilities and services for the workforce in new ways. Many of these developments align with developing new and innovative office-like workplaces.

Other technology innovations are changing the set of tools that knowledge workers can (and will) use, enabling them to work in new and fundamentally different ways. Each profession will use different tools, which can be shared between them. With the increasing mobility of the workforce that results from this, this 'virtual workplace' will stay nevertheless connected to them. People will travel between locations and buildings, but they will always carry their virtual workplace with them.

Summary

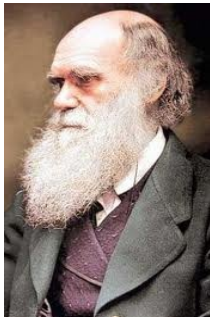
The definition of workplace may fundamentally change over the coming years, requiring FM professionals to accommodate these changes. Technological innovation is not only facilitating change but is also resulting in changing work patterns.

This implies that FM professionals will have to grasp the essence of the technological developments that take place and position themselves for the changes they will invoke. Further, the FM profession will need to understand how best to implement the new technologies with traditional legacy systems and the potential impact of this integration on the workplace. Both the FM and the IT worlds interact and mutually influence each other.

3 Business Agility

Organizations are under continuous pressures to change. For the FM activities this often results in changing demands that organizations put forward requiring from the FM management the ability to react accordingly.

Successful organizations are effective in their reaction towards change in circumstance. The notion of being responsive to change and the ability to counter change in an



effective way is also denoted as 'agility'.

Responsiveness to change is an important asset.

Darwin described his law on 'survival of the fittest':

*It is not the strongest of the species that survives,
nor the most intelligent that survives.*

It is the one that is the most adaptable to change.

Figure: Darwin

Workplace Innovation

The emerging new generation of workplaces shares the element of 'flexibility'.

The dominant change in concept is that they allow people to share facilities between them instead of having a specific work station assigned to each individual. The ratio between desks and employees is typically smaller than one:

not all employees can be seated at a work station (desk) at the same time: there are not enough work stations (desks) available.

Note that this principle can only be implemented in a feasible way when employees indeed work at different locations and are not in the facilities at the same time. Shared workplaces' are by their concept using a smaller footprint (m², SqFt) than assigned workplaces.



This does not only bring potential benefits in costs for housing, environmental aspects are positively influenced as well: per capita the use of natural resources (starting with energy) is reduced by the mere fact that the average size of facilities declines. One could state that the introduction of shared workplaces has a positive influence on sustainability.

Figure: types of workplaces in the built environment

For space management, the introduction of these types of Workplaces introduces new working practices and poses new challenges to FM professionals.

First of all, we see that detailed master planning (allocating people to individual workstations) is now replaced by much less granular approaches where space managers are at the most allocating areas to operating units (departments). By abandoning the 1:1 employee to desk allocation, space managers are deprived from a convenient metric. At this stage we see desk-to-employee ratios (flex-factor) ranging from 1 to a figure of 0,5²

Employees are not by default present in these types of facilities. When they are, they will use the space types that fit their work requirements and thus will 'wander' through the facilities at their own choosing.

Gartner and MIT School of Architecture and Planning³ mentioned the notion of the 'agile workplace' already in the year 2001. The study asserted that:

" the workplace is undergoing a major transformation from a predetermined, standardized and stationary container for work to a network of distributed, electronically-connected places designed to accommodate new patterns of work and continuous change."

² Figures from Twijnstra Gudde, 2011, Netherlands

³ Gartner: A leading IT Trend watcher, see www.gartner.com

MIT: Massachusetts Institute of Technology: see http://sap.mit.edu/resources/portfolio/agile_workplace/

We see that current workplace innovation projects are introducing the notion of 'agility' in the built environment: the facility is being enabled to harbor different types of activities, allow people to meet, work and collaborate in changing patterns through time. They are more adaptable to change in workplace demand.

However, the introduction of the new type of shared workplaces introduces a new type of problem to the FM space management professional:

Understanding how the facilities are effectively used.

This understanding is important from three main perspectives:

1. Fitting supply to actual demand

On a space management level, the question is about the quantitative fit-out of facilities in respect to workspace types: meeting rooms, concentration work, team work etcetera. Does the facility present what is really asked for by the workforce? Is it effective?

2. Portfolio management: assessing the need to acquire or dispose facilities.

These type of decisions are involving high financial consequences and are generally taken on the facilities portfolio level. Informed decisions require good insight in both the actual occupancy rates of facilities as well as their potential capacity (can I harbor more people in this facility and if yes, how much more?).

3. Assisting the facilities' users

In the new generation of workplaces, the user (the employee) needs to understand in an easy way where fitting space to work can be found, where to find colleagues and how to book resources like meeting rooms for future use.

To answer these types of questions, FM professionals will look at IT solutions.

Employee Mobilization

Information Technology is going through a process of commoditization. With the emerged extensive use of internet, many applications are developed for mass use: the Internet has become the 'place of business' for the business-to-consumer market. IT services are being commoditized and applications and tools are becoming easier to use and acquire. This in turn is leading to faster and widespread adoption. This adoption is often done autonomously by people. In their private life, people are buying devices like Smart Phones and Tablets. On thee they will install applications that are provided to them via the Internet. This phenomenon is also known as *consumerization*.

As a consequence the situation emerges that they use certain tools outside the office and expect their employers to provide access to them as well.

The phenomenon of consumerization of IT results in the 'education' of employees in the use and availability of technology, driving them to expect the same level of service from their employers.

In many organizations, IT management is moving away from a prescribed set of tools to support a policy of adaption to change. "BYOC" (bring your own computer) or BYOD (Bring Your Own Device) is a good example of this, where employees are enabled to pick devices of their preference⁴ and have them connected to the company's IT infrastructure.

This represents a real challenge to the IT professionals, since they are concerned with the requirement to provide information security to the organization as well. This drives them to adopt organization-specific distribution channels and application certification procedures and tools.

Leading IT Trend Watcher Gartner⁵ states that the use of mobile IT tools will continue to grow significantly in the years to come:

- Global spending on media tablets is forecast to increase at an annual average rate of 52% through 2015.
- This boost has more than offset a reduction in the PC forecast, which factored in substitution by media tablets.
- Including media tablets has increased our computing hardware growth forecast from 7.5% to 9.5% for 2011.
- By 2014, annual spending on media tablets will be greater than that for the separate storage, print and server segments.

Professional IT tools, the specialized business-tools that employees use for the execution of their professional tasks are being put available outside the facility-bound local-area network infrastructures as well. The 'virtual workplace' is emerging.

The annual costs per workplace in FM range between € 7 K to € 13 K.
The annual costs for IT per employee is comparable to this figure.

The key to the virtual workplace is that it enables and enhances the mobility of people. Today's workers are offered the opportunity to work at times and in places of their own choosing. Their perception of the workplace that employers offer them is not only

⁴ Laptops, tablet PCs, smart phones, e-readers, etc.

⁵ www.gartner.com

created by just the physical environment. This development enables IT, FM and HR management to relate to each other holistically in terms of the workplace.

Definition Of “Workplace”

So, what is the full definition of “workplace” today? For FM professionals, the built workplace is both key to and a prime focus of their activities. Obviously, we see some fundamental changes occurring in the built environment. Flexibility and supporting the

mobility of the workforce are significant elements of workplace change.



Specifically for knowledge workers, the definition of workplace is implicitly changing and will continue to do so. A new type of workplace is being added to the built environment: the virtual workplace. New software applications and information channels are emerging.

Figure: workplace typologies

One could state that the virtual workplace is independent to the people using it. Within this workplace, there are three aspects of Information technology emerging:

- **Devices:** new generations of personal devices are becoming available. Simplicity, ease of use and high-level user experience are key elements. Devices are expected to be further personalized.⁶
- **Network connectivity:** being connected to the network/Internet is a factor of increasing importance. Networking technologies are diversifying to meet different connectivity needs.⁷ Network connectivity is not only moving toward a ubiquitous service, the increase in bandwidth (the ability to transport large volumes of data) is also enabling new types of applications.
- **Applications and information:** Corporate business applications are gradually allowing people to work independently of a location by use of the internet.⁸ Additionally, there are new types of applications emerging that shape the virtual

⁶ Wearable devices, surface/flexible displays and so on.

⁷ Examples: 3G and 4G networks, Wi-Fi and mesh networking. See also the IFMA Foundation publication “Facility Management Technology Today,” Eric Teicholz, editor.

⁸ For example, the trend toward Web-based application user interfaces, as opposed to software installation on specific devices.

workplace for its users. Think of social networking tools,⁹ as well as tools to enable the sharing and exchanging of information and collaboration, the emergence of services to store data on the internet¹⁰ and applications for specific internet-based functions.¹¹ The way applications can be acquired and installed is simplified through cloud computing, further lowering thresholds to using them.

The emergence of the virtual workplace will not be without consequence for the built environment. The facilities will have to integrate and support workplace virtualization and assist employees in using them in an easy and comfortable way.

4 IT At The Workplace

Technology has multiple applications in the field of Facility Management, both in the built environment as in the virtual environment.

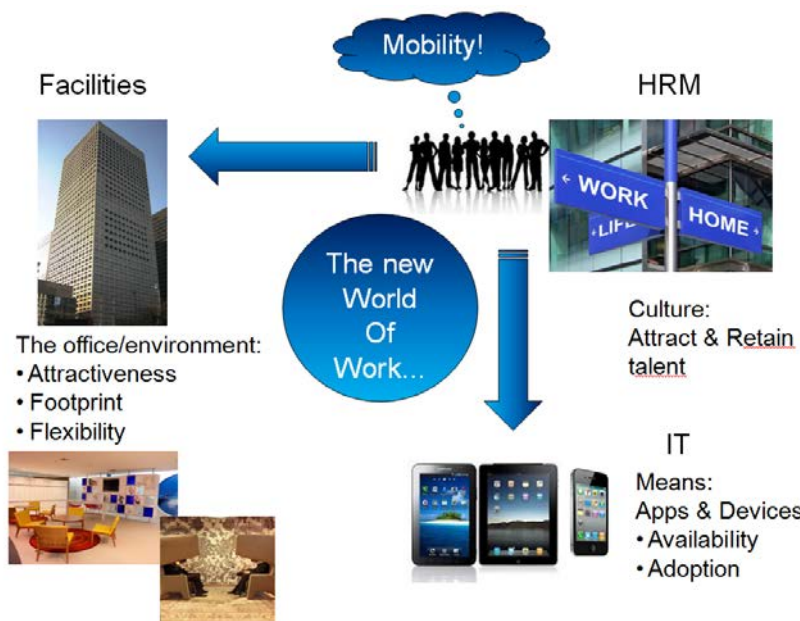


Figure: aspects of workplace innovation

Smart Infrastructures

In the built environment, the notion of ‘smart infrastructures’ points to the integration of building related systems with workplace related information systems¹², creating an environment that is able to effectively respond to its actual and expected use. Sensor technologies are emerging that can provide information on the effective use of facilities

⁹ Facebook, Twitter, LinkedIn, etc.

¹⁰ For example, Dropbox, Box.net and iCloud.

¹¹ For example, Google Apps, Microsoft Online, Salesforce.com, Wikis, Asana, BIM (discussed later in this chapter), application stores for smartphone apps, etc.

¹² FMIS, CAFM, IWMS are mostly used as labels for these types of systems

or parts of them. An example of application for sensor technology is to be found around the management of ‘no-show’ in meeting facilities: people tend to reserve a space but due to a variety of circumstances, often do not use the space at all or use it for only part of the time. The risk is that it blurs the meaning of effective workplace availability.¹³ This in fact reflects the need for an automated “check-out” solution not requiring any action on the part of the worker. By linking (even existing) sensors to the reservation system, no-show situations can be identified and registered, allowing for automated cancellation of the reservation itself, but also providing the FM professionals with information on no-shows that they can use to either foster behavioral change or correct faulted situations.

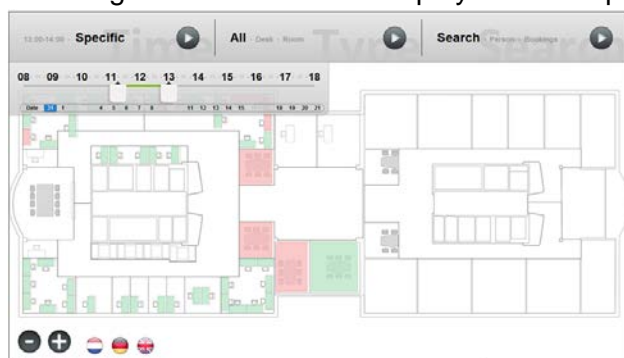
Note that in some circumstances, sensor information can already be obtained by using the existing security system infrastructures. These systems are in many cases able to provide useful (depersonalized) information when linked to the facility management information systems.

The analysis of the effective use enables profound insight into the use of facilities by space management professionals, enabling them to plan corrections where necessary.

FM professionals can investigate options to *integrate* the existing building IT infrastructures with their FM related information systems. This provides opportunity to use the information provided by those systems in understanding how facilities are used. They will need to work with their IT management to achieve these types of goals.

Digital Signage

Providing use information to employees in the physical infrastructure is seen often,



especially in the shared workplace environments. Using the reservation- as well as occupancy information and feeding that back to the users in the facility, provides a powerful tool to enable the effective use of the facilities and help Employees to find their way in a convenient way.

Figure: an example of Digital Signage. Finding and booking spaces and workstations.

One can expect that signage information around facilities will be *mobilized*. Applications will emerge on mobile devices like Smart Phones and Tablets, allowing their users to find their way around buildings.

¹³ A well-known phenomenon for meeting rooms

Hybrid Infrastructures

As of today, there are some forms of what one could call ‘Hybrid Infrastructures’. Perhaps the most well known example of this is to be found around ‘video conferencing’. A video conference facility combines the physical infrastructure with the



Figure: Video Conferencing.

IT application providing video and sound connections between them.

How to optimally design and size these types of facilities is not a matter of either IT management or FM management. The design and implementation of these types of infrastructures calls for close cooperation between FM and IT.

Social Networking

Social Networking as nowadays provided by LinkedIn, Xing, Facebook Twitter and others, basically provides ‘connectivity’ between individuals. Organizations are looking for means to establish the ‘company social network’, allowing their employees to identify colleagues with competences they need or interests they share.

One could argue that this is the ‘virtual’ form of ‘adjacency planning’, introduced to foster effective collaboration between departments in the assigned workplace environments.

Especially in shared workplace environments, the value of these types of applications will be appreciated, discovering the agile ‘knowledge structure’ of the organization.

5 Conclusion



The definition of ‘workplace’ is changing in fundamental ways. As provider of the workplace in the built environment, Facility Management professionals would create new potential in enriching their facilities when they would seek intimate collaboration with their peers in IT.

Figure: aspects of the modern workplace.

About the Author

As chief technology officer, Erik Jaspers heads up Planon's innovation policy as well as the management of the Product & Solution Roadmaps for Planon Software, a global leader in IWMS solutions.

After earning a degree in mechanical engineering, he began working in software development and has held various senior positions in IT Project Management and Information Management for multi-national companies including ATOS (Origin) and Philips.

He has been with Planon since 1999 and is committed to remaining at the forefront of innovation in facilities management, including maximizing opportunities to use mobile and wireless technology.

About Planon

Planon is a global software provider that enables organizations to solve their Facility Management and Real Estate challenges in the most effective way by providing superior software solutions and excellent customer service. The Planon series of solutions include Space & Workplace Management, Maintenance Management, Integrated Services Management and Real Estate Management. Started in 1982, Planon has more than 1,800 clients in 40 countries and offices in the U.S., Canada, the U.K., The Netherlands, France, Belgium, Germany, Austria, Singapore and India.